TEXTILE TECHNOLOGY DIGEST

VOLUME 11 JULY, 1954 NUMBER 7

# ABSTRACTS



## FIBERS A

### NATURAL FIBERS A 1

**Aminization of cotton**

W. A. Reeves and J. D. Guthrie (Southern Regional Research Laboratory). *Textile Research J. 23:* 522-527 (August, 1953).

Methods are described for the aminization of cotton as raw stock, sliver, yarn, and fabric by curing with 2-aminoethyl-sulfuric acid in the presence of sodium hydroxide. Results of work with compounds related to the acid and some observations on other methods of aminization are reported. Experiments to increase the degree of aminization in a single operation are reported on. 5 references.

**Chemical and physical properties of aminized cotton**

W. A. Reeves, O. J. McMillan, Jr. and J. D. Guthrie (Southern Regional Research Laboratory). *Textile Research J. 23:* 527-532 (August, 1953).

Chemical properties, and some of the physical properties, of aminized cotton are compared to those of untreated cotton. Topics covered are dyeing properties, attachment of flameproofing agents, metal complexes, and reaction with nitrochlorobenzenes. 18 references.

**Effect of oxidation and reduction processes upon the properties of wool**

E. Sorvik. *Medd. Svenska Textilforskningsinst., Goteborg, No. 35:* 1-15 (1953). Summary in *Chem. Abstracts 48:* 6703 (June 10, 1954).

**Relationship between various surface properties of wool fibers. Part 3. Sorption of dyes and acids in wool fibers**

J. Lindberg (Institute for Applied Textile Research, Gothenburg, Sweden). *Textile Research J. 23:* 573-584 (August, 1953).

The diffusion rate of dyes and acids into wool fibers treated with alcoholic potash was measured. Epicuticle was found to exercise the main control on diffusion rate. A theory is given in which differences in permeability of the epicuticle depend on polarity of surface layer. 25 references.

**Relationship between various surface properties of wool fibers. Part 4. Wettability**

J. Lindberg. *Textile Research J. 23:* 585-588 (August, 1953).

Wettability of wool fibers depends on the epicuticle. Close relationships exist between friction, rate of diffusion of dyes and acids, and surface tension. It is thought surface properties of the fiber can be changed without removing the cuticle by an alteration of the molecular structure of the epicuticle. 19 references.

**Selective absorption of optical antipodes by wool**

W. Bradley, R. A. Brindley and G. C. Easty. *Discussions Faraday Soc. No. 16:* 152-158 (1954).

The absorption of mandelic acid and some of its related acids by wool is discussed along with their optical resolution in wool. As complexity of acid molecules increased, absorption and resolution in the fibers decreased. 19 references.

**Italy's hemp industry**

E. Quagliaroli. *Fibres 15:* 195-197 (June, 1954).

This article describes the present position of the hemp industry in Italy.

**When and how long flax should be retted**

F. Tobler. *Melliand Textilber. 35:* 603 (June, 1954); *in German.*

The general rule that flax should be retted when it has ripened and become yellow is not specific enough to be of practical use. The color alone is no adequate criterion. Other aspects are also of decisive importance, e.g. fine stems can be retted quicker than thicker ones; the center parts of the stem ripen first; and the lignin content slows down the retting process.

**New findings as regards the chemistry of natural silk**

H. Zahn and H. Zuber. *Textil-Rundschau 9, No. 3:* 119-127 (1954); *in German.* Through *Brit. Cotton Ind. Research Assoc. 34:* 401 (May 31, 1954).

The investigations were carried out by examining macerated silk fibroin, cross-linked with reactive fluorine compounds, under the electron microscope.

## MAN-MADE FIBERS A 2

### Fiber project

Y. L. Sandler. Polytechnic Institute of Brooklyn, Brooklyn, N. Y. July 1953. Technical report no. I under contract no. Nonr 839(01), Project no. 330-028. 33p. Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photostat $5.25. PB 113 538.

Factors leading to the production of fibers of high strength from a given material are studied, using polyacrylonitrile as a model substance. Methods of production of fibers on a small scale and test methods are described. Attempts of improving the crystallinity, and thus the strength, of the fibers are described. Possible structural reasons for the lack of crystallinity are discussed.

### World man-made fiber survey

*Textile Organon 25:* 81-96 (June, 1954).

Statistics are given for world production (except for Iron Curtain countries) of man-made fibers. There is a directory of world man-made fiber producers.

### Current problems and future trends in synthetic fibers

J. H. Dillon. *Textile Research J. 23:* 298-312 (May, 1953).

Weaknesses of man-made fibers and progress in minimizing their deficiencies are discussed with main emphasis on apparel and decorative fabrics. General properties of fibers and fabrics are covered, and then individual commercial fibers are taken up. 7 references.

### Technical developments leading to present man-made fibers

J. B. Quig. *Textile Research J. 23:* 280-288 (May, 1953).

Technical developments in the man-made fiber industry are discussed along with a number of variables which must be considered when searching for fiber-forming polymers. 8 references.

### Regenerated cellulose fiber structure: fundamental improvements

N. Drisch and L. Soep (Comptoir des Textiles Artificiels, Paris, France). *Textile Research J. 23:* 513-521 (August, 1953).

The development of a greatly improved regenerated cellulose fiber and its properties are discussed. Properties are considered superior to high tenacity rayon. Uses will be in tire cord and apparel industry. Production is in semi-works stage. Fiber is prepared from cellulose pulp with high D.P. and low percentage of short chains, and a viscous solution of the pulp is stretch-spun in a strong acid bath. 10 references.

### Ardil fiber from groundnuts

J. Grindrod. *Fibres 15:* 183-186 (June, 1954).

This article describes the processes involved in extracting from groundnuts protein suitable for use in the Ardil spinning solution. Preliminary treatment of the raw material has an important bearing on the ultimate fiber quality and certain special requirements have to be met, necessitating modifications to the conventional oil-extraction process for margarine production.

### Polyaminotriazoles

R. W. Moncrieff. *Texture 1:* 153-158 (March, 1954).

Polyaminotriazoles are a new class of fiber-forming compounds, made from hydrazine and a dicarboxylic acid. They are at their best copolymerized with nylon salt, when they possess excellent dyeing properties and, unique among the synthetics, can be dyed with direct colors. They are expected, too, to have other good properties such as a reasonably high moisture regain and kindliness of handle and to be comfortable to wear. 11 references.

### The development of Terylene

J. R. Whinfield. *Textile Research J. 23:* 289-293 (May, 1953).

How Terylene came to be discovered, considerations which led to the exploitation of this discovery on commercial scale, and the phase of large-scale manufacture.

### Development of Vinylon

T. Tomonari (Kurashiki Rayon Co., Ltd., Osaka, Japan). *Textile Wkly. 53:* 1762-1766 (June 11, 1954).

Development, properties, and uses of Vinylon are briefly described.

## GENERAL A 3

### Relation between the microstructures of fibers and sorption phenomena. Part 4. Analysis of sorption isotherm

H. Furuya. *J. Soc. Textile Cellulose Ind. Japan 9, No. 12:* 608-613 (1953); *in Japanese (English summary).* Through *Brit. Cotton Ind. Research Assoc. 34:* 399 (May 31, 1954).

Sorption isotherms were measured on several textile fibers at 30°C and 40°C, and the sorption mechanism was examined on the basis of experimental data.

### Textile processing: significance of fiber moisture absorption

*Texture 1:* 159-165 (March, 1954).

A brief discussion of the influence of the absorbed water in the internal structure of each fiber and its consequent influence on fiber properties in relation to dyeing and finishing.

### Mechanical conditioning of textile fibers

G. Susich. *Textile Research J. 23:* 545-572 (August, 1953).

The altered tensile properties, including tensile recovery behavior of mechanically conditioned fibers were investigated. In connection with mechanical conditioning, the following topics were investigated: (1) alterations occurring spontaneously or produced by heat or swelling on acetate rayon; (2) structural changes of cellulose fibers; (3) cold-drawing of a Dacron monofilament; and (4) behavior of a cotton thread. 39 references.

## YARNS B

## OPENING AND PICKING B 1

### Whitin downstroke cleaner

*Whitin Rev. 21:* 9-11 (May-June, 1954).

A simple changeover is described which improves cleaning performance.

### The new wool oils

K. E. Marsden. *Textile Merc. 130:* 1002-1005 (June 4, 1954).

The advantages of new type wool oils for replacing the oleine types are discussed particularly for good dyeing.

## CARDING AND COMBING B 2

### Theory of carding, with some of its implications in textile manufacture and research

P. M. Strang. *Whitin Rev. 21:* 20-35 (May-June, 1954).

A restatement of an earlier paper on the theory of carding. 10 figures. 10 references.

### Care of card clothing

J. M. Reed. *Textile Bull. 80:* 71-72 (June, 1954).

### Haigh-Bonser web clearer

A. Bonser. *Textile Merc. 130:* 1047-1051 (June 11, 1954).

The story of the development, beginning in 1949, of the Haigh-Bonser web clearer for removing impurities from carded webs.

### Removal of impurities by fiber dissociation

J. Briandere. *Industrie Textile:* 13-14 (January, 1954); *in French.* Through *Brit. Cotton Ind. Research Assoc. 34:* 313 (April 30, 1954).

A device is described by means of which it is possible to remove from the ribbon lap the small knops formed by masses of entangled fibers, which are eliminated with difficulty during the normal carding operation. The device has the advantage that it is small and its weight is reduced as compared with heavy machines that treat the material in the form of a card web or sliver. Disturbances caused by static electricity are eliminated, and the impurities are effectively removed with the least damage to the fibers in the material treated.

### Vacuum stripping of cotton cards

M. Gerdal. *Industrie Textile:* 21-25 (January, 1954); *in French.* Through *Brit. Cotton Ind. Research Assoc. 34:* 313 (April 30, 1954).

The author describes in detail the Weco stripping system, which comprises one suction nozzle for the cylinder at the back and another for the doffer in the front of the card, and is constructed so as to be able to strip the cylinder and the doffer simultaneously or alternately. In spite of the high efficiency of vacuum stripping, however, it is necessary to clean the card (at least once per month) by brushing, in order to remove the residual impurities.

### Whitin roller cards for synthetic fibers

*Whitin Rev. 21:* 36-43 (May-June, 1954).

Model M for fibers up to 3″ in length and Model N for fibers from 3″ to 6″ are described.

Photographs, diagrams, and tables of recommended speeds and settings.

### Woolen carding widths and their effect on production and quality

*Platts Bull. 8, No. 6:* 155-158 (1954).

## DRAWING AND ROVING B 3

### Simultaneous twisting and drawing of fibers

P. Antoine. *Industrie Textile No. 2:* 83-86 (1954); *in French.* Through *Brit. Cotton Ind. Research Assoc. 34:* 391 (May 31, 1954).

The disadvantages of previous processes (loss of cohesion between the fibers or of their homogeneous structure) are pointed out and it is shown that they can be eliminated if the drafting zone is displaced towards a point where the bond between the uniform and parallelized fibers offers sufficient resistance, being reinforced during the drawing operation by the twist imparted simultaneously. Various devices based on this principle are described and illustrated.

### Effect of the amount of waste on the degree of draft in practice

H. Perner. *Faserforsch. u. Textiltech. 5, No. 2:* 52-55 (1954); *in German.* Through *Brit. Cotton Ind. Research Assoc. 34:* 391 (May 31, 1954).

Each drawing process to which the sliver, slubbing, and roving, respectively are subjected, results in loss of weight of the fibrous material; this loss consists mainly of dust and other impurities, and fibers removed by the flat card and twisting and spinning machines. In this article, the relationship between the amount of waste and the degree of draft is investigated and an attempt is made to include into the calculation of machine drafts the portions of the material removed during the drawing processes. Any differences between the calculated and measured draft values indicate faulty settings of the machines, for example, excessive air currents, incorrect position of the grid, or faulty card adjustment. The relationships are explained on two examples (doubling and twisting machine and flat card).

### Getting the most life from your cots

A. C. Littlejohn. *Textile Bull. 80:* 73 (June, 1954).

## SPINNING, WINDING, TWISTING B 4

### Balloon control

P. F. Grishin (T.M.M. (Research) Ltd.). *Platts Bull. 8, No. 6:* 161-191 (1954).

This paper gives an account of some of the problems associated with large package spinning at higher speeds. Problems were solved mathematically before attempting to spin very large packages. Subsequent experimental work confirmed the mathematical deductions and provided supporting data which could not be obtained solely by mathematical analysis. The first two parts of the paper deal with the general theory of the yarn balloon without control, making allowance for air drag, and with the problem of yarn tension. Part 3, which will appear later, considers the application of the general theory of balloon control to find admissible speeds for a given package for specified yarn tension and method of balloon control. 8 references.

### Continental ring spinning frame

Maschinenbau Kiel A. G. *Textile Wkly. 53:* 1750-1752 (June 11, 1954).

Features of the MAK type 631 ring spinning machine are described.

### Modernizing your spinning

*Whitin Rev. 21:* 12-19 (May-June, 1954).

Modernization of spinning through changeovers of the super-draft system, band to tape drive, and traverse increase are described.

### Staple fiber spinning

H. Ashton. *Textile Wkly. 53:* 1756-1760 (June 11, 1954).

Tow to top conversion systems and modified drafting are briefly discussed.

### Whitin ball bearing spindle

*Whitin Rev. 21:* 44-47 (May-June, 1954).

This description of the Whitin ball bearing spindle includes a diagram and table of spindle speeds.

### The importance of reducing yarn breakage and its distribution

A. V. Terjumnov. *Tekstil. Prom. No. 1:* 25-29 (1954); *in Russian.* Through *Brit. Cotton Ind. Research Assoc. 34:* 314 (April 30, 1954).

The causes of yarn breakage and the importance of their elimination and control are discussed and an equation is given for calculating the loss in production due to the breaking of yarn: P per cent$=(o^2/a\text{-}1) \times 100/2a$, where a is the

mean number of breakages per 100 hours of control and o is the distribution of the breakages.

### Condenser mule for waste or woolen yarns

Maschinenbau Kiel A.G., Germany. *Textile Wkly. 53:* 1348-1352 (May 7, 1954).

Features of the MAK type 641 self acting mule are described by means of a numbered diagram.

### Woolen and worsted spun yarn in hosiery

E. W. Munz (Rose Mills, Inc.). *Am. Dyestuff Reptr. 43:* P266-P269 (April 26, 1954).

A summary of the woolen and worsted systems of spinning with a correlation between these methods of spinning and their use in hosiery. A resume is given of the fibers used in hosiery that can be spun by these systems. The characteristics of yarns spun by these systems and their effect on the properties of finished hosiery are discussed.

### A handbook of twisting. Chapter 2. Part 4. Twisting devices

N. Truslow. *Textile Bull. 80:* 88-89 (May, 1954).

The up-twister and the two-for-one twister are discussed.

### Cheese-winding

P. J. M. van Gorp. *Tex 13:* 184-187, 293-298 (1954); *in Dutch.* Through *Brit. Cotton Ind. Research Assoc. 34:* 391 (May 31, 1954).

Advantages of cheese-winding, shapes of cheeses and cones, and methods of winding are reviewed, and the effect of cone density on dyeing efficiency and the precision-winding process are discussed. Various types of cones are illustrated.

## GENERAL B 5

### The theory of yarn strength distribution. Part 1

H. Uchida, K. Mihira and J. Shimizu. *J. Soc. Textile Cellulose Ind. Japan 10, No. 1:* 17-23 (1954); *in Japanese (English summary).* Through *Brit. Cotton Ind. Research Assoc. 34:* 402 (May 31, 1954).

The theories of yarn-strength distribution discussed by Peirce, Spencer-Smith, etc., were found insufficient to cover the yarn-strength distribution in general. A new equation, based on the work of Epstein, was therefore worked out and compared with experimental results for rayon staple yarn.

### Compound woolen and worsted yarns: processing and analysis

*Wool Record 85:* 1286-1289 (June 3, 1954); 1343-1344 (June 10, 1954).

### Processing fine fibered cottons

J. D. Towery (Texas Technological College). *Textile Bull. 80:* 74-76 (June, 1954).

### Blending nylon staple on the cotton and woolen systems

*Fibres 15:* 159-160 (May, 1954).

This article contains suggestions as outlined by British Nylon Spinners Ltd. for spinning yarns from nylon staple fiber blended with other fibers on cotton type spinning machinery and on the woolen systems.

### Crimped yarn

F. Fourne. *Melliand Textilber. 35:* 492-495 (May, 1954); *in German.*

This paper describes processes for producing wool-like rayon yarns. Descriptions of the doubler-twisters, setting units (steamers), and the winding frames required for these processes are given. The text contains a table with comparisons of the economics of the different processes for producing rayon crepe yarn, Perlon continuous filament for hosiery, and crimped yarns.

## FABRICS C

## WARPING, SLASHING, YARN PREPARATION C 1

### Instantaneous warping stop motion

J. Brivel. *Industrie Textile No. 2:* 91-93 (1954); *in French.* Through *Brit. Cotton Ind. Research Assoc. 34:* 391 (May 31, 1954).

The simple device described consists of a releasing mechanism connected with an electromagnet. When the thread breaks, the warping cylinder is instantaneously stopped by means of a break band, one end of which is displaced in a slide rail and disconnects simultaneously the driving gear.

### Lubrication of artificial textiles

J. Devouldy. *Industrie Textile No. 2:* 89-90 (1954); *in French.* Through *Brit. Cotton Ind. Research Assoc. 34:* 392 (May 31, 1954).

The disadvantage of excessive charge, produced by rubbing the yarn against a device saturated with the lubricating agent, can be eliminated

by applying the agent (usually a pasty or viscous fatty substance, liquefied by heating) by means of a twirl in form of a cage with several bars which revolve slowly in a container with the heated lubricant. Its viscosity is regulated by the temperature in the container. The yarn is brought intermittently into contact with one of the bars, the amount of the lubricant applied depending upon the time of contact. The uniform spread of the lubricant applied is effected by passing the filament through a levelling device placed immediately below the lubricating device. The process is of particular advantage in softening rayon fibers.

## WEAVING C 2

### Circular loom with gripper

J. Martinek. *Melliand Textilber. 35:* 621-622 (June, 1954); *in German.*

The author describes a new construction, in which the shuttle draws the yarn off from a cheese. This enables a very small shed to be used in weaving, resulting in smooth operation and low power requirements.

### Intervals in weft changing on weaving looms

A. Henrion. *Industrie Textile No. 2:* 95-96 (1954); *in French.* Through *Brit. Cotton Ind. Research Assoc. 34:* 393 (May 31, 1954).

The inconvenience of frequent weft changing, associated with an increase of production costs, is shown to be eliminated by using the thread from the shuttle only for tying it to one of the selvages, the weft being provided by a supplementary thread placed parallel to the warp threads between the reed and the fabric; this thread is of practically continuous length. The replacement of the bobbins is effected at the end of the very long cycles. The process (invented by the Etablissements Ducarin) is applicable to all looms, without the necessity of essential alterations, and the fabric obtained is characterized in that each weft is double.

### The Maxbo shuttleless loom

*Textile Wkly. 53:* 1842-1846 (June 18, 1954).

Some recent modifications to this Swedish loom are mentioned and the development and structure of the loom are described.

### Most common causes of shuttle wear

J. M. Tuten (Draper Corp.). *Textile Bull. 80:* 78-80 (June, 1954).

### New towel loom

Henry Livesey Ltd. *Textile Wkly. 53:* 1696-1698 (June 4, 1954).

A new high-speed, loose reed towel loom is described.

### Quality in weaving

D. C. Snowden. *Texture 1:* 167-169 (March, 1954).

A brief survey of close setting, center-closed shedding, cover, warp breakage, weft tension, mixing of wefts, and other causes of cloth defects.

### Stresses on treadle dobbies

W. Frenzel and H. Martin. *Faserforsch. u. Textiltech. 5, No. 2:* 45-51 (1954); *in German.* Through *Brit. Cotton Ind. Research Assoc. 34:* 393 (May 31, 1954).

The tension in the harness wires and in the shaft rising motion was measured and it was found that, during opening of the shed, the shaft motion works in opposition to the warp-thread tension, producing particularly high stresses when the lifting blades engage with the hook ends. The amount of clearance space between blade-edge and hook-end at the close-shed position is thereby of great importance. It is shown that, if the dobby is set correctly, the clearance can be very small (3 mm) and it is possible to reduce in this way the impact stresses due to acceleration of the loom.

### Swiss weaving techniques

E. Honegger. *Textile Merc. 130:* 989-995 (June 4, 1954).

Swiss developments in winding, warping and beaming, sizing, the warp drawing-in machine, and pirn winding are discussed.

### Swiss weaving machinery. Part 2. Looms

E. Honegger. *Textile Merc. 130:* 1039-1045 (June 11, 1954).

## GENERAL C 4

### Some properties of serges made from blends of wool with acrylic type synthetics

H. Bogaty, N. R. S. Hollies, J. C. Hintermaier and M. Harris. *Textile Research J. 23:* 536-544 (August, 1953).

Eight fabric properties of serges made from blends of wool and Dynel, Acrilan, or Orlon were investigated. Generally many of the properties evaluated do not change very greatly when up to one-third of the wool is replaced by synthetic; large scale changes come about in going from a

50/50 blend to an all-synthetic fabric. The role of fiber randomness in yarns is discussed. 18 references.

### Investigation of impact load absorption through suspension line elongation

E. A. Gimalouski. Pioneer Parachute Co., Manchester, Conn. December, 1952. 232p. Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $2.50. PB 111 239.

The purpose of this investigation was the study of suspension lines under actual operating conditions, having varying degrees of elongation, energy absorption and elasticity. A secondary purpose of the investigation was the study of fabric porosity, shape and type of canopy, and method of parachute deployment.

### Construction of fabrics and their manufacturing process. Parts 6 and 7. Shrinkage of warp and weft

H. Matsuda. *J. Soc. Textile Cellulose Ind. Japan 10, No. 1:* 24-32 (1954); *in Japanese (English summary).* Through *Brit. Cotton Ind. Research Assoc. 34:* 393 (May 31, 1954).

Shrinkage of warp and weft yarns must be balanced to give a perfect texture of the fabric, the calculation of shrinkage at various angles of intersection being taken as criterion of perfectness. The extent of shrinkage of warp and weft is affected by the diameter, density and deformation of these yarns. In a very closely woven fabric, the texture of the fabric improves with decreasing shrinkage of the warp and increasing shrinkage of the weft. The improved fabric texture is associated with decreasing total amount of warp and weft yarns required.

### Design in woven fabrics. Part 19. Broken twill effects

D. C. Snowden. *Wool Rev. 27:* 41-43 (June, 1954).

### Fabric with woven moire effect

P. Nivel. *Industrie Textile No. 2:* 97-99 (1954); *in French.* Through *Brit. Cotton Ind. Research Assoc. 34:* 394 (May 31, 1954).

The process for obtaining this fabric consists in weaving, on the same loom, two independent, sufficiently transparent fabrics connected at points or lines (straight, curved or broken), the connection being controlled by a dobby or a figuring mechanism. The two fabrics can have one common warp or two separate warps. Examples are described and illustrated.

### Rayon honan

*Am. Textile Reptr. 68:* 59-63 (June 24, 1954).

Rayon honan is a fabric with an irregular weave which is composed of a filament yarn warp and spun yarn filling, both of a regenerated type. A layout chart and photomicrograph are included along with instructions for the designing and weaving of these fabrics.

### Fabrics—their relative value to the coating industry

J. W. F. Young. *Papers Am. Assoc. Textile Technol. 9:* 136-146 (June, 1954).

The production of pyroxylin and vinyl coated fabrics is briefly reviewed. Five groups of fabrics used by the vinyl coating industry are discussed: the standard cotton, knitted, rayon, nylon, and glass. Discussion.

### Modern trends in paper makers' felts

E. Race. *Svensk Papperstidn. 57:* 353-362 (May, 1954); *in English.*

A comprehensive survey.

### Madhya Bharat saris

S. Rangarajan. *Indian Textile J. 64:* 361-363 (March, 1954).

Design and weaving of the Indian sari.

### The make of a carpet. Part 2

A. Crossland. *Textile Recorder 72:* 85-87 (May, 1954).

The author describes the weaving of three-shot jacquard Wilton and Axminster carpets and discusses also the spool Axminster three-shot weave and face-to-face Wilton weaves.

### New industrial applications of Fiberglas textiles

R. C. Horton. *Am. Dyestuff Reptr. 43:* P330 (May 24, 1954).

Because of the resistance of Fiberglas to heat, light, insects, micro-organisms, and chemicals and because of its smoothness and strength, Fiberglas textiles are finding extensive industrial uses. For some purposes, such as insect screening and firehose, it is advantageously coated with polyvinylchloride. Staple Fiberglas is employed to reinforce wallboard and other materials, such as plastics and foam rubber.

### Novelty yarn suiting

*Am. Textile Reptr. 68:* 10-11,28 (May 13, 1954).

Acetate warp and filling yarns with a loop effect have been used to produce a wool-like

appearance in a new fabric. Tables giving some details of fabric construction, yarn twist, and cloth cost are presented.

### Novelty yarns in fancy dress cloths

*Wool Record 85:* 1094,1103 (May 13, 1954).

Suggestions are given for the use of novelty yarns, along with some specific examples.

### Sewing of knitted and woven goods

P. Leonhardt. *Textil-Praxis 9:* 165-167 (February, 1954); *in German.* Through *Brit. Cotton Ind. Research Assoc. 34:* 320 (April 30, 1954).

Difficulties arising in sewing fabrics made from synthetic fibers, namely, damage to the yarn by the sewing needle, friction and heating of the needle, faulty thread tension, unsuitable sewing thread, etc., are discussed.

### Textile design. Part 5. Weaves as motifs

*Textile Recorder 72:* 78-80 (May, 1954).

Many attractive fabrics can be constructed in designs which have as their motif one of the more elemental weave structures. The designs are on a larger scale than the weave structure and can be quite complex in character. Some are so complex as to require jacquard shedding, but by judicious and skilful drafting, many of them can be adapted for weaving on dobby looms. A number of these designs are described and illustrated.

### Textile scaffolding threads. Part 28. The functions of the removable carrier thread

A. Johnson. *Skinner's Silk and Rayon Record 28:* 492-493 (May, 1954).

Open-work in acetate rayon and in nylon fabrics.

### Tweeds for women's wear

*Wool Record 85:* 917-918 (April 22, 1954).

Styling for Saxonies and Cheviots.

## FINISHES D

### WET PROCESSES D 1

### Evaluation of commercial enzymatic desizing agents

U. Miyaoka and M. Masunaga. *J. Soc. Textile Cellulose Ind. Japan 9, No. 12:* 605-608 (1953); *in Japanese (English summary).* Through *Brit. Cotton Ind. Research Assoc. 34:* 394 (May 31, 1954).

The method described is based on determining the degree of solubilization of starch size, and comparing the degree of transition of various desizing agents into their insoluble state. An improved method for determining the residual starch on the fabric is also given: the accuracy of this method is within ±5 per cent.

### Fireproofing of textiles

A. Dupont. *Industrie Textile No. 2:* 109-119 (1954); *in French.* Through *Brit. Cotton Ind. Research Assoc. 34:* 398 (May 31, 1954).

The development of fireproof finishes and fireproofing processes are reviewed, the latter comprising: impregnation with water-soluble chemical compounds (finishes that are stable neither to water nor to bad weather), deposition, in the fibers, of water-insoluble compounds, finishes resistant to fire, weather, and mildew, use of chlorinated compounds and alginates, urea-formaldehyde resins and other aminoplasts, and various other commercial products. An extensive patent literature is quoted, supplemented with a list of recent French, Swiss and German patents. Brief reference is also made to testing methods.

### The solidity of the resin of resin-finished fiber

I. Imazu. *Resin Finishing and Appl. (Japan) No. 1:* 16-18 (1952). Through *Chem. Abstracts 48, No. 3:* 1694 (1954).

In fibers treated with dimethylolurea, the resin retention increased to 90-95 per cent by heating to 120°C for 30 minutes or to 145°C for 20 minutes. The treated fiber was digested in 0.1 N hydrochloric acid and the volume of the devitrified formaldehyde was constant after 24 hours.

### Requirements of dyeing and finishing chemicals for application to cellulose acetate

T. Jackson (British Celanese Ltd.). *Fibres 15:* 187-190 (June, 1954).

The particular requirements for the satisfactory coloration and finishing of cellulose acetate fiber are shown in this resume of the nature and application of the dyes, auxiliaries, and finishes which have been developed for acetate processing. 6 references.

### Practical aspects of grease-wool scouring

R. E. Wolfrom (Rohm and Haas Co.). *Am. Dyestuff Reptr. 43:* P372-P379 (June 7, 1954).

This paper describes, from a practical standpoint, the scouring of grease wool with nonionic detergents. Following a brief statement of the

problem, the choice of detergent by laboratory procedures is discussed, and typical commercial plant equipment is described. The main body of the paper recounts the author's experience in the large-scale scouring of carpet wool and apparel wool. Considerable engineering data are presented on such matters as detergent adds and control measures during the run; cost calculations comparing various detergents are also discussed. The successful extraction of wool grease and adequate disposal of waste effluents are also mentioned.

### The treatment of wool with formaldehyde before bleaching

E. Koller. *SVF Fachorgan Textilveredlung 9:* 1-6 (1954); *in German.* Through *Chem. Abstracts 48:* 7307 (June 25, 1954).

Wool that has been treated with HCHO can subsequently be bleached very effectively with alkaline peroxide with very little degradation of the wool by the alkaline solution.

### Calcium soap deposit on natural silk

*Farber-Ztg. 7, No. 2:* 37-38 (1954); *in German.* Through *Brit. Cotton Ind. Research Assoc. 34:* 336 (April 30, 1954).

The cloudy and dusty appearance of a pure-silk dress after dyeing, which initially was attributed to the redeposition of a finishing agent on the fabric surface, was found to be due to a calcium soap deposit. Since calcium soap is formed in the presence of excessive amounts of hardness formers in the water, its redeposition on the fabric can be avoided by using a calcium-soap dispersing agent, or its formation prevented by adding compounds which are able to form complexes with the hardness formers in the wash-liquor.

### Examination of the squeezing effect during hydro-extraction of textiles

E. Selter. *Textil-Praxis 9:* 178-183 (February, 1954); *in German.* Through *Brit. Cotton Ind. Research Assoc. 34:* 327 (April 30, 1954).

The so-called squeezing effect is defined as the percentage moisture retained in the fabric after squeezing, based on the weight of the dry fabric at 20°C, 65 per cent R.H. Experiments, and essential points for determining the squeezing effect, namely, theoretical principles of moisture removal from fabrics by squeezing, padding, and wet calendering, theory of the squeezing process, and dependence of the effect upon pressure, are discussed.

### Laundering of cotton

W. Fong and H. P. Lundgren. *Ind. Eng. Chem. 45:* 13A-15A (October, 1953). Through *J. Soc. Dyers Colourists 70:* 167 (April, 1954).

It is reported that certain proteins and neutral synthetic polymers act in a similar manner to carboxymethylcellulose (CMC) in inhibiting the redeposition of soil during the laundering of cotton. Their effectiveness was assessed by the photometric measurement of the deposition of carbon black from detergent-alkali builder systems. Of the proteins, gliadin was highly effective, being rather better than CMC; a correlation was found between whiteness retention activity and proline content of the protein. The effectiveness of uncharged synthetic polymers depended on their molecular size; after an optimum size, soil deposition increased with increasing molecular weight. Partially acetylated low molecular weight polyvinyl alcohol (PVA) and low molecular weight polyvinylpyrrolidone (PVP) gave excellent results. Charged polymers, e.g. Na polyacrylate, were unsatisfactory. In all cases, whiteness retention was impaired by the presence of electrolytes—PVA being extremely sensitive, PVP relatively insensitive, with gliadin and CMC intermediate—and by lowering the pH.

### The problem of yarn mercerization

H. D. Malcev and A. A. Smaroskolskii. *Tekstil. Prom. No. 1:* 35-37 (1954); *in Russian.* Through *Brit. Cotton Ind. Research Assoc. 34:* 326 (April 30, 1954).

Experiments have shown, that the mercerization of yarn should be carried out on packages consisting of hanks not exceeding 80 g. After mercerization, it is advisable to apply a sizing composition consisting of glycerine, a hygroscopic agent (wetting agent) and Turkey red oil in order to impart elasticity to the yarn. Paraffin compositions should be substituted by soaps, stearin, or other preparations easily removable during scouring. Before mercerization, the yarn should be gassed and the carbon thoroughly removed.

### The finishing of ribbons

C. Temblet. *Industrie Textile:* 598-600 (August, 1953); *in French.* Through *Brit. Cotton Ind. Research Assoc. 34:* 326 (April 30, 1954).

This is one of a series of articles, in which the author discusses the finishing of half-silk and all-silk ribbons and gives formulations for suitable finishes and methods of their application.

### Chemical finishing techniques. Part 3

A. C. Nuessle (Rohm and Haas Co.). *Textile World 104:* 104-105,218-224 (May, 1954).

Glazing and embossing, crease recovery, crease resistance, side effects, and improved dye fastness are discussed.

### Crease resist finishes for cotton and linen fabrics. Part 2

*Textile Recorder 72:* 88-90 (May, 1954).

The author discusses two new processes (BP 689 102 and BP 692 184) which involve chemical combination with, and permanent modification of, the cellulosic fiber.

### Improving the crease properties of fabrics: experimental control of processing stages

E. Elod. *Textil-Praxis 9, No. 1:* 68-74 (1954); *in German.* Through *Brit. Cotton Ind. Research Assoc. 34:* 277 (April 15, 1954).

In this review, the author discusses the individual stages of the crease-proofing process for cellulose hydrate fibers. Although various types of synthetic resin precondensates (mainly those of aminoplasts) may be used, they all should have particle sizes smaller than the pores in the cellulose hydrate fibers. The solutions of the precondensates used must remain stable for some time in presence of condensation catalysts. The precondensates, distributed as uniformly as possible in the individual fibers, are converted after drying and condensation into the effective resins. Factors affecting these processes are discussed and the properties of the fabric impregnated with the anti-crease agent are described. There are twenty references.

### Flameproofing with THPC

W. A. Reeves and J. D. Guthrie (Southern Regional Research Laboratory). *Dyer 111:* 567-570 (April 16, 1954).

Because of the great need for a better, durable type, flame-retardant finish suitable for many end uses, work was undertaken at the Southern Regional Research Laboratory to develop such a finish for cotton fabrics. Numerous approaches to the problem were tried, but the first lead to the method described in this paper was obtained, during the investigations of the chemical properties of aminized cotton, when it was found that tetrakis (hydroxy-methyl)-phosphonium chloride would react with and make aminized cotton fabric flame-resistant. The process is described. 6 references.

## DYEING AND PRINTING D 2

### Carrying developmental work through to plant vat dyeing procedures. Part 2

F. O. Stone. *Textile Bull. 80:* 89-91 (June, 1954).

This article covers the water soluble vats which are chemically the sodium salts of acid esters of anthraquinone and indigoid vat dyes (leuco form).

### Dyeing of cellulosic fiber yarns with anthrasol dyestuffs

G. Strohbach. *Melliand Textilber. 35:* 645-648 (June, 1954); *in German.*

This paper deals exhaustively with practical methods of applying anthrasol dyestuffs to vegetable fiber yarns in the form of hanks and wound packages. Special consideration is given to the application properties of this class of dyestuffs, and to their outstanding features, such as their excellent levelness and penetration and simplicity of application.

### The dyes of synthetic fibers. Part 1. Dyeing properties of purpurogallin

T. Endo, F. Shimizu and G. Aida. *Research Repts. Fac. Textiles and Sericult., Shinshu Univ. 2:* 117-120 (1952). Through *Chem. Abstracts 48:* 374 (January 10, 1954).

The results of dyeing Vinylon and acetate rayon with purpurogallin are recorded.

### Effect of Dowicide A on wool in dyeing blends of wool and Dacron polyester fiber

*DuPont Tech. Bull. 10:* 17-18 (March, 1954).

After considerable experience with Dowicide A as a carrier for use in applying dyes to Dacron polyester fiber, it was concluded that acidification of Dowicide A baths at temperatures of 90°F. or below results in precipitation of the regenerated ortho-phenylphenol. Since such precipitation might contribute toward spotting of the goods, it is recommended that temperatures for acidification be increased to 110° to 120°F. A table is presented showing tensile strength of wool treated in Dowicide A baths at various temperatures and for varying times before acidification.

### Fastness of acid dyes on wool to chlorination and to dry cleaning with Perclene

*DuPont Tech. Bull. 10:* 29-31 (March, 1954).

Tables show the shade change and stainings of Du Pont acid dyes when subjected to chlorination and to dry cleaning tests.

### Formulas for matching shades shown in the United States Army color card, revised second edition, 1953

*DuPont Tech. Bull. 10:* 19-25 (March, 1954).

Shades shown in the United States Army

Color Card have been matched on cotton broadcloth with Du Pont vat dyes and on rayon skeins with Du Pont direct dyes. The shades were given cable numbers by the Textile Color Card Association and range from 65001 through 65024. Dyes used for matching the shades are listed.

### One-bath process for dyeing blends of Dacron polyester fiber and rayon

*DuPont Tech. Bull. 10:* 26-28 (March, 1954).

A new process has been developed for dyeing blends of Dacron polyester fiber and rayon which employs Dowicide A carrier in a single bath. Essential features of the process are described.

### Pigment printing

K. Craemer. *Melliand Textilber. 35:* 523-527 (May, 1954); *in German.*

The author gives his views on the fundamental principles underlying modern pigment printing and the object of this process. It is only when pigment prints are applied alone that their full significance for application techniques and their potential qualitative advantages are realized, and many special problems associated with this process can be solved. Provided the limitations clearly set to the pigment printing process are observed, the prospects for this type of textile processing are very promising.

### Reduction-oxidation potential of vat dyestuffs

O. Hensel. *Melliand Textilber. 35:* 513-515 (May, 1954); *in German.*

The reduction-oxidation potential of a range of vat dyestuffs was measured. The "leuco potential" and the "safety potential" are described as important values for the practical dyes. 9 references.

### The significance of the coefficient of diffusion in polyamide dyeing

B. Kramer. *Melliand Textilber. 35:* 518-523 (May, 1954); *in German.*

Investigations carried out with various classes of dyestuffs show that, by using diffusion measurements with Ultramid 6 A as model substance, important aspects of the dyeing behavior of these classes of dyestuffs towards polyamides can be predicted. The information thus obtained conforms with the results of practical experience. These investigations are of theoretical and practical value, and open up new possibilities of finding answers to many problems which are still unsolved in the field of synthetic fiber dyeing.

### The so-called optimum dyeing temperature

V. E. Rosmovcev. *Tekstil. Prom. No. 1:* 38-39 (1954); *in Russian.* Through *Brit. Cotton Ind. Research Assoc. 34:* 324 (April 30, 1954).

It was found that, in dyeing cellulose with direct dyes, the optimum dyeing temperature is not constant, but increases with decreasing processing time and with increasing concentration of neutral electrolytes in the bath. For a given dyeing time, it is necessary to carry out the dyeing process at the highest possible temperature, optimum absorption of the dye being obtained by means of a suitable electrolyte concentration.

### Experiments on the continuous dyeing of wool with special reference to the Standfast molten metal technique

M. R. Fox, I. Seltzer and C. Preston. *Cobbler 6:* 31-37 (1953-54).

This process could be used in dyeing piece goods for school uniforms, ladies dress goods, and gabardines or slubbing and carpet yarns. The results of laboratory dyeings with acid and vat dyes are given. Troublesome results such as skittery dyeing, excessive metal pickup, and poor tinctorial value of colors are discussed, and means of correcting or minimizing them are given. Several procedures for producing satisfactory dyeing are listed. Discussion after talk and 8 references are included.

### High pressure hot water heating system

N. Fincher. *Cobbler 6:* 41-50 (1953-54).

The high pressure hot water heating system gives 20 to 25% savings in fuel costs for dyeing operations over conventional direct heating with steam. Other advantages of system are no dilution of dye liquor, no tangling of stock, and better control of temperature. Principles of system are explained, and cost calculations for an actual plant trial and a theoretical operation are given. Discussion following talk is included.

### Level dyeing and levelling agents

G. H. Lister. *Cobbler 6:* 7-15 (1953-54).

Four methods for measuring the level dyeing properties of dyes, particularly those for wool, are discussed. Three of the methods are empirical and employ skeins in a dyebath. In the fourth, percentages of color absorbed and desorbed are measured. A schematic diagram and pictures of each of two devices for producing laboratory dyeings with the same tendency toward unevenness as machines used commercially are given. These are followed by a general discussion of leveling agents on wool.

### Metal complex dyestuffs without sulfonic acid groups for textile dyeing

H. Pfitzner. *Melliand Textilber. 35:* 649-651 (June, 1954); *in German.*

The author reports on experiments carried out with metallizable dyestuffs and metallic salts which have led to the development of completely new kinds of complex types. These are 1:2 dyestuff complexes of trivalent metals, free from sulfonic acid groups. The Neopalatine dyestuffs of BASF (chrome complex dyestuffs) represent a further step forward in this field.

### Neutralization as a means of improving the hand of woolen goods dyed in acid baths

G. Silén and L. Pakkala. *Medd. Svenska Textilforskningsinst., Goteborg, No. 33:* 1-9 (1953). Summary in *Chem. Abstracts 48:* 6704 (June 10, 1954).

### Non-ionic agents as level dyeing assistants in wool dyeing

I. D. Rattee. *Cobbler 6:* 39-40 (1953-54).

An explanation of how non-ionic agents help produce level dyeing with chrome and acid milling colors. Efficient circulation of liquor and good temperature control are important to the effective use of these agents.

### Package dyeing of synthetic fibers

G. T. Douglas. *Cobbler 6:* 17-29 (1953-54).

Precautions to be taken in forming packages and operating dyeing machines are pointed out. Direct dyestuffs are classified in groups according to their tendency to give unlevel dyeings on viscose rayon, and results of investigations using these dyes given. The Abbott-Cox (vat dye applied, then reduced and oxidized) process used on viscose is discussed. Some remarks are made on the application of sulfur and azoic colors to viscose and the dyeing of acetate rayon and nylon.

## DRY PROCESSES D 3

### Infra-red drying in the textile industry

R. Glansdof. *Industrie Textile No. 2:* 107-108 (1954); *in French.* Through *Brit. Cotton Ind. Research Assoc. 34:* 398 (May 31, 1954).

The installation described for continuous thermal treatment of textiles consists of (1) a frame provided with an infra-red radiator (2) a support with a ray-reflecting surface, on which the material to be treated is placed, and (3) means for regulating the temperature on the surface. Devices for treating the fabric with active or inert gases or steam, for calendering, or for application of ultrasonics may be attached to the infra-red drying installation. The treatment may also be carried out under increased or reduced pressure, or in a high-voltage electric field.

## GENERAL D 4

### The treatment of bias fabrics at a constant angle

M. Soulaz. *Industrie Textile No. 2:* 127-128 (1954); *in French.* Through *Brit. Cotton Ind. Research Assoc. 34:* 398 (May 31, 1954).

The ribbon produced by cutting spirally, at 45°, a woven fabric tube is gassed, bleached, finished, etc., and fed into a widening machine so that the angle between the crossed threads which has decreased to 25-35° during the treatment, becomes more obtuse (70-80°) and the band assumes the required final width. The bias band may then be subjected, before or after drying, to a special treatment, for example, glazing.

# TESTING AND MEASUREMENT E

## FIBERS E 1

### A note on the electron microscope study of cellulose fibers in ultrathin sections after treatment with thallous ethylate

S. Asunmaa. *Svensk Papperstidn. 57:* 367-368 (May, 1954); *in English.*

An attempt to produce a specific electron staining.

## YARNS E 2

### Analysis of sliver irregularity during drafting

K. Shirakashi and K. Mihira. *J. Soc. Textile Cellulose Ind. Japan 9, No. 12:* 600-605 (1953); *in Japanese (English summary).* Through *Brit. Cotton Ind. Research Assoc. 34:* 390 (May 31, 1954).

Irregularity curves of slivers after doubling and drawing were analyzed by dividing the ir-

regularity curve into two or more curves by the method of the "moving average" and analyzing their correlograms. As the irregularity curve may not necessarily be expressed by means of a Fourier function, the "moving average" can be conveniently expressed by $X_t+(n-1)/2$.

### Flexural rigidity of textile materials. Part 1. Flexural rigidity of filaments and yarns

S. Onogi and S. Ando. *J. Soc. Textile Cellulose Ind. Japan 9, No. 12:* 617-620 (1953); *in Japanese (English summary).* Through *Brit. Cotton Ind. Research Assoc. 34:* 402 (May 31, 1954).

The determination was carried out by the vibrating reed method; the apparatus described can be used for the measurement of denier and rigidity. It was found that the flexural rigidity and Young's modulus of the filament are not affected by the commercial softeners and the moduli of elasticity of yarns are about 1/50 to 1/40 of those of the single filaments. In yarns, however, the softeners appear to reduce the rigidity. The deniers determined dynamically for filaments whose cross-sections are not perfectly circular are appreciably smaller than those determined by the gravitational method.

## FABRICS E 3

### Flexural rigidity of textile materials. Part 2. Flexural rigidity of fabrics

S. Onogi and S. Ando. *J. Soc. Textile Cellulose Ind. Japan 10, No. 1:* 32-35 (1954); *in Japanese (English summary).* Through *Brit. Cotton Ind. Research Assoc. 34:* 403 (May 31, 1954).

It was found that the vibrating reed method is also applicable to the measurement of flexural rigidity of fabrics, and to the estimation of the effect of starch size upon the rigidity of cloths. A more practical tester, the Clark paper-softness tester, was also used for measuring the flexural rigidities of several fabrics; the values obtained by this tester were found to be approximately proportional to the "true" values obtained by the dynamic method.

### A new apparatus for measuring the thickness of fabrics

H. Sommer and F. Winkler. *Faserforsch. u. Textiltech. 5, No. 2:* 77-78 (1954); *in German.* Through *Brit. Cotton Ind. Research Assoc. 34:* 403 (May 31, 1954).

Owing to its great sensitivity, the apparatus described was found satisfactory for determining the relationships between the pressures applied and the thickness of fabrics. The advantages of the apparatus comprise (a) the constant load which is not affected by frictional forces, and (b) the possibility of varying the pressure from 1 g/cm² to 250 g/cm².

### Practical aspects of the shrinkproofing of wool

C. Earland. *Fibres 15:* 191-193 (June, 1954).

The ability of wool to felt may or may not be an advantage, depending on the end-use of the fiber. In this article the procedure for carrying out felting shrinkage tests is described, followed by a review of some anti-felting processes which can be used to fulfill different requirements. Patent references.

### Testing methods for viscose rayon fabric defects

J. Pinte. *Bull. Inst. Textile France No. 45:* 7-30 (April, 1954); *in French.*

An explanation of the research methods used in the laboratories of the Centre de Recherches de la Soierie et des Industries Textiles particularly in examination of viscose rayon fabrics with defects in the form of streaks or stripes. Three groups of test methods exist: (1) physical and mechanical methods, in particular the plotting of serigraphic curves; (2) physico-chemical methods, swelling and swelling anisotropy, allowing the micro-structure of the fiber to be determined; (3) chemical methods of determining the characteristic properties of rayon deteriorated by hydrolysis or by oxidation. Some examples are given. 7 references.

### Testing the serviceability of textiles. Part 2. Wear tests

H. Bohringer. *Faserforsch. u. Textiltech. 5, No. 2:* 55-59 (1954); *in German.* Through *Brit. Cotton Ind. Research Assoc. 34:* 403 (May 31, 1954).

In this article, the author discusses the absolute and specific damage values and their calculation; period of wearability; deterioration during wear and end-value; determination and comparability of fabric quality; effects of processing, structure of the yarn and woven and knitted fabrics, and use of the finished product on its serviceability, and external factors affecting it. The method for carrying out a wear test is described; the damage value is calculated from the sum of all types of damages, divided by the number of samples and periods of wear.

### Quality testing of textiles. Part 1

H. Bohringer. *Faserforsch. u. Textiltech. 5:* 9-14 (January, 1954); *in German.* Through *Brit. Cotton Ind. Research Assoc. 34:* 335 (April 30, 1954).

In this article (the first of a series to follow), the author reviews publications on (1) special investigations into the problem of testing the serviceability and evaluation of quality, (2) wear tests and findings, and (3) testing apparatus. Fifty-five literature references are quoted.

### Testing the utility value of launderable articles: the folding-scraping test

O. Viertel. *Melliand Textilber. 35:* 541-544 (May, 1954); *in German.*

After giving a brief review of the various test methods for establishing the launderability of fabrics, the author describes a few informative experiments carried out with Weltzien's folding-scraping tester, and compares them with dry and wet strength tests. The results show that the values obtained with this instrument are in good conformity, so that this method should prove very useful in the future for ascertaining launderability.

## GENERAL E 4

### Anomalies in colorimetric pH measurements

L. Marcou. *Textil-Rundschau 9, No. 3:* 128-141 (1954); *in French.* Through *Brit. Cotton Ind. Research Assoc. 34:* 395 (May 31, 1954).

Colorimetric pH measurement in solutions is adversely affected by the presence of natural salts, proteins, adsorbents, and particularly surface-active substances (wetting agents); according to the cationic or anionic nature of the indicator and the impurity present, higher or lower values are obtained. Surface-active substances cause a change in the state of aggregation and, thus, in the absorption spectrum of the dye molecule. The effect increases in some cases up to a critical concentration of the surface-active agent; above this concentration, the molecules of the wetting agent agglomerate, and the indicator molecules become less reactive owing to their peptization. The use of colored indicators in presence of surface-active agents should therefore be avoided.

### Chromatographic method for testing the dyeing properties of acid wool dyes

H. Egli and M. Perrig. *Textil-Rundschau 9:* 61-69 (February, 1954); *in German.* Through *Brit. Cotton Ind. Research Assoc. 34:* 326 (April 30, 1954).

A chromatographic method for testing the levelling properties of acid dyes is described, in which the textile material (wool) is used as the substrate. A similar method for testing cotton dyes has been described by W. Flugel and A. Koch. The migration of the dye through the column of wool depends upon the pH of the dye liquor and material, the migration rate increasing with increasing pH values. The method is compared with the migration test, and its usefulness as a supplement to the usual testing methods is pointed out. Several examples for the application of this method are given.

### Critical examination of textile assistants

F. Gasser. *Textil-Praxis 9:* 186-191 (February. 1954); *in German.* Through *Brit. Cotton Ind. Research Assoc. 34:* 336 (April 30, 1954).

Methods for the evaluation of textile assistants (detergents) are described and diagrams are given to show the detergent action of various products on wool and bleached cotton material, soiled with a mixture of equal parts of olein, olive oil and mineral (spindle) oil to which a fat-soluble pigment was added. Excess of the soil was removed by washing in hot water (80°C) at a wash-liquor ratio of 1:50 and subsequent rinsing in cold water, and the fabric was stored for at least 8 days before testing. The diagrams not only show the washing intensity, but also certain characteristic properties, such as the behavior at varying concentrations.

### Direct measurement of moisture contents

Shaw Electronics, Bradford, England. *Fibres 15:* 175 (May, 1954).

The precision moisture meter, Lodge condition meter, and electronic moisture meter are described.

### The evaluation of the detergency of textile auxiliaries

E. Gotte. *Melliand Textilber. 35:* 534-535 (May, 1954); *in German.*

In this second part of his paper (the first part appeared in *Melliand Textilber. 34:* 754-755 (August, 1953)) the author compiles the principles underlying the evaluation of test soiling materials. 51 references.

### Experiments for standardizing test methods for textile auxiliaries. Part 7. Evaluation of the stability against hard water

**of surface-active substances by the dilution method**

G. Schwen. *Melliand Textilber. 35:* 545-547 (May, 1954); *in German.*

**Introduction to quantitative textile chemical analysis. [Einfuhrung in die quantitativen textilchemischen Untersuchungen].**

H. Walland. Stuttgart: Konradin-Verlag, 1953. 336p. Second edition. *In German.* Through *Brit. Cotton Ind. Research Assoc. 34:* 332 (April 30, 1954).

This is a general textbook on chemical analysis, with particular emphasis on textile applications; there are sections on water, soap, oils and fats, starch, and bleaching agents, as well as on fiber analysis.

**Method of reaction and identification of polyvinyl and polyacrylic compounds in connection with finish and fiber analysis**

H. Rath and L. Heiss. *Melliand Textilber. 35:* 536-540 (May, 1954); *in German.*

On the basis of existing detection methods for polyvinyl and polyacrylic substances, new specific methods for the identification of these substances within the framework of the analysis of finishing agents and fibers are described. The detection of polyvinyl compounds is carried out by converting these into polyenes which can be recognized by the occurrence of certain dyed shades. Polyacrylic acid esters and polymethacrylic acid esters can be identified and distinguished by converting them with phenyl lithium into carbinols, which also give characteristic color reactions. Finally, a qualitative alkoxy detection in polyvinyl ethers, and also in polyacrylic acid esters and polymethacrylic acid esters, is described.

**The near infrared reflection of dyed materials**

T. Green. *Textile Mfr. 79:* 597-598 (1953). Through *Chem. Abstracts 48:* 5503 (May 10, 1954).

For most shades infrared reflectance lay between 25 and 60% relative to the MgO standard. The larger the molecule, the greater the infrared absorption. There seemed no general relation between chemical constitution and near infrared absorption in dyes used for textile purposes.

**Statistical methods for Poisson processes and exponential populations**

A. Birnbaum. *J. Am. Statistical Assoc. 49:* 254-266 (June, 1954).

The textile research worker and statistician frequently deal with phenomena in which events of some type occur randomly in time, or in which particles are randomly distributed in space. The Poisson process is the formal model of such phenomena. A number of such statistical methods are described and illustrated. 24 references.

# INDUSTRIAL ENGINEERING F

## MACHINERY AND MAINTENANCE F 1

**Developments in textile machinery: Panel discussion**

*Papers Am. Assoc. Textile Technol. 9:* 105-122 (June, 1954).

*New and improved American system spinning machinery,* by J. H. Bolton, Jr. (Whitin Machine Works), p. 108-110; *Recent developments in Saco-Lowell machinery,* by J. L. Truslow (Saco-Lowell Shops), p. 111-112; *Development of auxiliary textile machinery,* by W. S. Terrell (Terrell Machine Co.), p. 113-114; *Developments in weaving machinery,* by F. M. Fitzgerald (Draper Corp.), p. 115-116; *New developments in wet finishing and drying equipment,* by J. H. Hunter (James Hunter Machine Co.), p. 117-120; *Discussion,* p. 121-122.

**Joanna's system of personalized fixing**

J. L. Delany (Joanna Cotton Mills Co.). *Textile Bull. 80:* 83-87 (June, 1954).

An organized system of personalized fixing in which each fixer is encouraged to feel a sense of responsibility for the machines under his care.

## QUALITY AND WASTE F 3

**New type of control chart limits for means, ranges, and sequential runs**

H. Weiler. *J. Am. Statistical Assoc. 49:* 298-314 (June, 1954).

Most conventional control chart limits are designed so that the ratio of the expected number of false alarms to the number of samples tested is fixed in advance irrespective of the sample size. In this paper, control charts are designed for which the expected ratio of false alarms to the number of articles tested is independent of the sample size. 3 references.

## GENERAL F 4

### A critical review of the literature of 1953 on sewage, waste treatment, and water pollution. Part 2

*Sewage and Ind. Wastes 26:* 695-744 (June, 1954).

Part 2 reviews industrial wastes, including textile (189 references) and water pollution (256 references).

### The use of packing in the biological treatment of textile-plant effluents

H. Dahlem. *Z. Ver. deut. Ing. 95:* 975-978 (1953). Through *Chem. Abstracts 48, No. 4:* 2298 (1954).

Large-scale experiments with waste waters from dyeing and bleaching plants have demonstrated the possibility of biological treatment by using recirculation. The residual sludge is not excessive in quantity, and operation is simple. The quantity treated is around 8000 cu. m./day; its pH was at times 12-13. The treating arrangement comprised a mixing pond, a sump pump, a drip tower, and a clarifying tank. Other details of the method are given.

### Linear programming

A. Henderson (Carnegie Institute of Technology). *Consulting Engr. 3:* 50-53 (May, 1954).

A discussion of simplified approaches to linear programming—the new management tool for calculating the best achievable result in a set of possible management courses, allowing for existing limitations. Although no specific textile examples are furnished, a number of textile mills have been investigating the use of this tool in planning production, in coordinating sales with the maximum production potential, in scheduling loom times for various styles, in investment problems, and in related aspects of management.

## SCIENCES G

## CHEMISTRY G 1

### Classifying detergents

J. V. Karabinos, G. E. Kapella and G. E. Bartels. *Soap and Chem. Specialties 30:* 41-43 (June, 1954).

A series of six organic qualitative tests is applied to the classification of various types of anionic and nonionic detergents.

### Investigation of the washing process. Part 9

W. Kling and H. Mahl. *Melliand Textilber. 35:* 640-645 (June, 1954); *in German.*

By using the electron microscope and a replica production technique which is described in detail it is possible to make visible on the fiber even those soil particles which lie below the limit of the light-optical microscope and are of particular interest from the aspect of washing technique. In some cases, these soil particles can even be identified. With the usual artificial and natural textile soil materials, the distribution of the particles is surprisingly uniform, so that a limited number of photographs gives a perfectly satisfactory indication of the degree of soiling. 11 references. 22 illustrations.

### The soiling of textile materials: an account of the general problem with some observations

W. H. Rees. *Shirley Inst. Mem. 27:* 141-160 (April, 1954).

Factors affecting the susceptibility of textile materials to soil during manufacture and in use are reviewed, and the nature of soiling matter and of the forces influencing fabric-soil adhesion are discussed. Laboratory techniques for the assessment of soiling, for investigating the soiling of textile materials by airborne matter and by contact with soiled surfaces, and for obtaining a measure of the adhesion of soil to fabrics are described and illustrative experimental data presented. 13 references.

### Adhesion of polymers to cellulose

A. D. McLaren (Univ. of California). *Modern Plastics 31:* 114-116, 181 (July, 1954).

A general theory of the adhesion of high polymers to cellulose is presented. The theory includes a consideration of the influence of the following factors: melt viscosity and tack temperature of polymers, kinds and numbers of polar groups in polymers, plasticization, temperature, and nature of the surface. With cellophane-polymer systems polarity and hydrogen bonding are of paramount importance in adhesion. 7 references.

### Adsorption of dyes by crystals

J. Whetstone (Imperial Chemical Industries Ltd.). *Discussions Faraday Soc. No. 16:* 132-140 (1954).

The present work has confirmed the importance of dye adsorption in crystal habit modification phenomena. A considerable weight of evidence has been obtained to support the view that adsorption is due to a close similarity in pattern between the polar groups in a dye molecule and the ions of a crystal plane. 10 references.

### Atomic models. Part 3. Stereochemical problems in dyeing

C. Robinson. *Discussions Faraday Soc. No. 16:* 125-132 (1954).

The use of models of dye molecules and cellulose and polypeptide chains in investigating stereochemical problems related to dyeing has been illustrated. Several important facts brought out by using these models are discussed. 21 references.

### Calorimetric studies of the reaction of naphthalene orange G with amino acids

A. N. Derbyshire and W. J. Marshall (Imperial Chemical Industries Ltd.). *Discussions Faraday Soc. No. 16:* 140-148 (1954).

The heats of reaction of eight amino acids with hydrochloric acid and the free acid of naphthalene orange G, respectively, have been measured. It is believed that the heat of absorption of the dye by wool is not due to direct interaction between groupings in the amino acids and the dye, but rather to the large hydrocarbon residue being withdrawn from the aqueous phase. 19 references.

### Dyeing of polyacrylonitrile fibers with anionic dyes

R. H. Blaker, S. M. Katz, J. F. Laucius, W. R. Remington and H. E. Schroeder. *Discussions Faraday Soc. No. 16:* 210-222 (1954).

The mechanism of dyeing polyacrylonitrile fibers is discussed for two cases in which the fiber through its affinity for $H^+$ and $Cu^+$ respectively, acquires cationic centers capable of permitting absorption of dye anions. 8 references.

### Dyeing of synthetic polypeptides

C. H. Bamford, J. Boulton, W. E. Hanby and J. S. Ward. *Discussions Faraday Soc. No. 16:* 222-229 (1954).

A study of the dyeing of a number of synthetic polypeptides has been made in an attempt to obtain information bearing on the dyeing of natural proteins, and the dyeing mechanism in general. Dyeing of polymers studied may involve sites located in the backbone, the side chains, and the amino end-groups. No evidence has been obtained indicating any difference in dye uptake of synthetic polypeptides in the $\alpha$ and $\beta$ configurations. 10 references.

### Mechanism of absorption of non-ionic dyes by polyethylene terephthalate

M. J. Schuler and W. R. Remington. *Discussions Faraday Soc. No. 16:* 201-209 (1954).

It is concluded that sorption of non-ionic dyes by polyethylene terephthalate takes place by a solution mechanism. Isotherms were measured for the distribution of three pure non-ionic dyes and their binary mixtures between polyethylene terephthalate and water with and without benzoic acid. The presence of benzoic acid displaced all isotherms toward the water. 10 references.

### Researches on monolayers. Part 4. Study of dyeing processes by the use of the unimolecular film balance

M. M. Allingham, C. H. Giles and E. L. Neustadter. *Discussions Faraday Soc. No. 16:* 92-105 (1954).

Possible means of dye fixation to fibers have been studied using simple compounds in place of fibers or dyes. Results indicate that cellulose holds dye by van der Waal's forces and that dyes are bound to proteins and nylon by intermolecular hydrogen-bonding involving amide groups. It is suggested that the formation of intermolecular CH...N and CH....O bonds are responsible for dye fixation to Terylene and cellulose acetate. 18 references.

### Solubility and activity of orange II sodium chloride and sodium sulfate solutions

A. B. Meggy. *Discussions Faraday Soc. No. 16:* 149-152 (1954).

Solubility of Orange II in NaCl and $Na_2SO_4$ solutions has been studied and calculations of activity coefficients have been made. Effect of larger activity coefficient for 2N solutions is sufficient to nullify the stripping and leveling effect which these electrolytes have at higher temperatures. The behavior of certain cellulose acetate dyes towards salts can be explained by assuming that they show the same type of behavior at 80-100°C as Orange II does at 25°C. 5 references.

### Crystallization phenomena in fiber-forming polymers

L. B. Morgan (Imperial Chemical Industries). *J. Appl. Chem. 4:* 160-172 (April, 1954).

The purpose of this paper is to review the fundamentals of crystallization processes in polymers, and how imposed changes on the manner of the crystallization affect the resulting structure 27 references.

# PATENT CHECKLIST

U. S. Patents may be obtained from the U. S. Patent Office, Washington 25, D. C., for 2 cents per copy. Photostatic copies of foreign patents are available. Charges for these photostat are based on the number of pages in the patent.

## FIBERS A

### NATURAL FIBERS A 1

**Process and apparatus for separating trash from lint cotton and the like**

D. W. Van Doorn (to Lummus Cotton Gin Co.). USP 2 681 476-477, June 22, 1954.

### MAN-MADE FIBERS A 2

**Method and apparatus for baling fibers and the like**

C. W. Cox (to American Viscose Corp.). USP 2 682 137, 139, June 29, 1954.

## YARNS B

### OPENING AND PICKING B 1

**Apparatus for cleaning and opening fragile fibers**

E. H. Novotny and L. M. Hedges (to Johns-Manville Corp.). USP 2 682 085, June 29, 1954.

**Device for stripping garnetting machines**

H. B. Barnet. USP 2 682 086, June 29, 1954.

**Grid section of picker**

W. Shaw, E. B. MacLean and T. R. Gregoire (to Saco-Lowell Shops). USP 2 681 478, June 22, 1954.

### SPINNING, WINDING, TWISTING B 4

**Automatic winding machine**

F. R. Piper and J. M. Gardner (to West Point Manufacturing Co.). USP 2 682 379, June 29, 1954.

**Bobbin**

J. R. Caldwell and G. L. Lake (to Meadows Manufacturing Co.). USP 2 682 380, June 29, 1954.

**Control for spinning frames**

D. E. Lewellen and E. F. Lewellen. USP 2 682 781, July 6, 1954.

**Machine for winding yarns**

F. B. Javery and R. C. Longvall (to War Compressing Machine Co.). USP 2 682 378 June 29, 1954.

**Thread clamping bobbin holder**

J. R. Grady and H. L. Muschamp (England). USP 2 682 377, June 29, 1954.

## FABRICS C

### WARPING, SLASHING, YARN PREPARATION C 1

**Method and apparatus for beam warping**

T. E. Watson (to Allen Warper Co.). USP 2 681 497, June 22, 1954.

### WEAVING C 2

**Apparatus for inserting filling yarns in circular looms**

J. P. Marin (Spain). USP 2 681 664, June 22 1954.

**Checkstrap for looms**

E. S. Meservey (to Slip-Not Belting Corp.) USP 2 682 896, July 6, 1954.

**Loom having automatic bobbin-changing mechanism**

J. F. Moseley and F. Davies (to The British Cotton Industry Research Assoc.). USP 2 68 666, June 22, 1954.

**Loom having an automatic weft supply motion**

K. Schwabe (Switzerland). USP 2 682 897 July 6, 1954.

**Multiple weaving loom**

C. Kiener (France). USP 2 682 894, July 6, 1954.

**Shuttle check for looms**

C. M. Smith. USP 2 681 665, June 22, 1954

**Shuttle driving mechanism for looms**

W. Wade (to American Viscose Corp.). USP 2 682 895, July 6, 1954.

## KNITTING C 3

**Catchbar safety means for knitting machines**

H. E. Haehnel (to Textile Machine Works). USP 2 682 164, June 29, 1954.

**Knitting machine**

A. Chiti (Italy). USP 2 681 553, June 22, 1954.

**Straight knitting machine**

F. Masak (to Svit, narodni podnik). USP 2 682 762, July 6, 1954.

## GENERAL C 4

**Multi-ply tubular woven fabric**

P. H. Slaughter. USP 2 681 667, June 22, 1954.

**Method of filling open mesh glass cloth with colloidal asbestos fibers and article produced thereby**

I. J. Novak (to Raybestos-Manhattan, Inc.). USP 2 681 870, June 22, 1954.

**Resin coated fibrous mass and method for producing same**

A. J. Auchterlonie. USP 2 681 866, June 22, 1954.

**Spool assembly and operating mechanism therefor in textile machines**

K. Strassler (to Aktiengesellschaft Joh. Jacob Rieter & Cie). USP 2 682 998, July 6, 1954.

**Web roll winder**

J. D. Haskell (to The Black-Clawson Co.). USP 2 681 771, June 22, 1954..

**Web severing means for tufting machines**

W. D. Reeves (to Russell-Lacey Manufacturing Co.). USP 2 682 238, June 29, 1954.

# FINISHES D

## WET PROCESSES D 1

**Anti-static treated textiles**

A. V. Riley, Jr. and R. D. Fine III (to Atlas Powder Co.). USP 2 683 101, July 6, 1954.

**Coated fabric and method of making same**

R. E. Thomas (to E. I. du Pont de Nemours and Co.). USP 2 682 484, June 29, 1954.

**Lubrication treatment of textile filaments**

W. P. Humphreys, Jr. (to Celanese Corp. of America). USP 2 682 486, June 29, 1954.

**Method of producing a coated sheet of fabric**

S. W. Strickman (to Gittlin Bag Co.). USP 2 682 485, June 29, 1954.

**Process for producing textile cellulose sulfo-ethyl ether cation-exchange material**

J. D. Guthrie, L. H. Chance and C. L. Hoffpauir (to the United States of America). USP 2 681 846, June 22, 1954.

## DYEING AND PRINTING D 2

**Acid vat dyeing of animal fibers**

H. Luttringhaus (to General Dyestuff Corp.). USP 2 681 845, June 22, 1954.

**Process for the ornamentation of textile fabrics**

W. S. Miller (to The Calico Printers' Association Ltd.). USP 2 681 867, June 22, 1954.

# TESTING AND MEASUREMENT E

## FIBERS E 1

**Fiber tester for determining fiber length, length uniformity and degrees of surface friction**

R. S. Hoisington. USP 2 660 889, Dec. 1, 1953.

**Dyeing of stretch yarns in the yarn state without loss of elasticity or curliness**

G. W. Brooks (to Belmont Throwing Co.). USP 2 679 739, June 1, 1954.

## YARNS E 2

**Uniformity meter for textile strands**

W. C. Anderson (to Deering Milliken Research Trust). USP 2 682 191, June 29, 1954.

# BOOKS, PAPERS, AND PAMPHLETS

**Added to the library during the past month**

## CHEMISTRY

| | | |
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| Bowen, E. J. | Fluorescence of solutions. | London, Longmans, Green, 1953. 91 p. |
| | Encyclopedia of chemical technology, v. 12. Sabadine to stilbestrol. | N.Y., Interscience Encyclopedia, 1954. 955 p. |
| Feigl, Fritz. | Spot tests. v. 2. Organic applications, 4th ed. | Amsterdam, Elsevier, 1954. 436 p. |
| Hamilton, L. F. | Calculations of analytical chemistry. 5th ed. | N.Y., McGraw-Hill, 1954. 340 p. |
| Manufacturing Chemists Association. | A guide for safety in the chemical laboratory. | N.Y., Van Nostrand, 1954. 234 p. |
| Radley, J. A. | Fluorescence analysis in ultraviolet light. 4th ed. | N.Y., Van Nostrand, 1954. 560 p. |

## DICTIONARIES

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| Patterson, A. M. | French-English dictionary for chemists. 2d ed. | N.Y., Wiley, 1954. 476 p. |

## ENGINEERING

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| | Ingenious mechanisms for designers and inventors. v. 3. | N.Y., Industrial Press, 1951. 536 p. |

## QUALITY CONTROL

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| American Society for Quality Control. | Textile quality control papers, v. 1, 1954. | Raleigh, N. C., 1954. 145 p. |

## TEXTILE ECONOMICS

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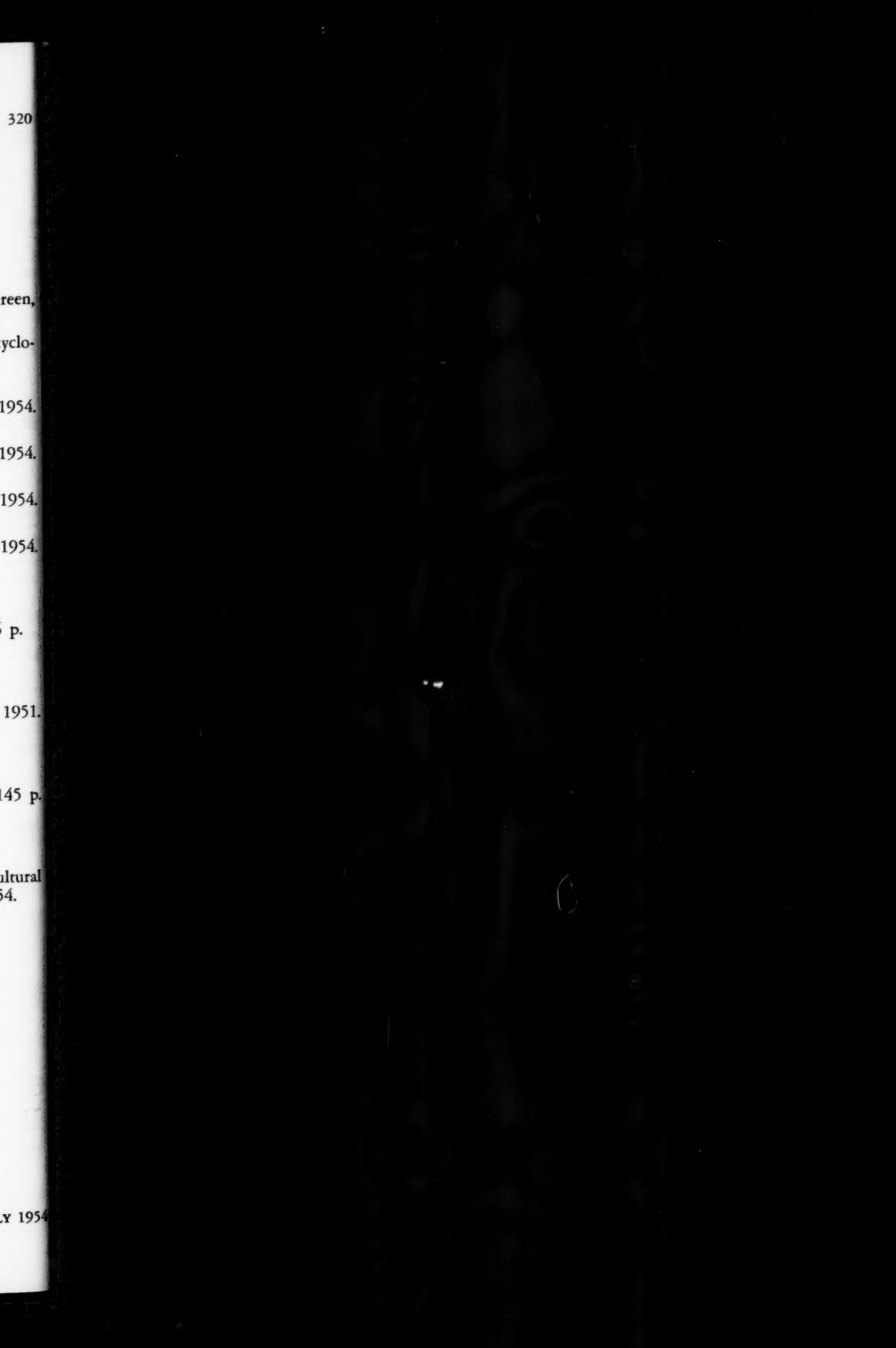
| Hermie, A. M. | Prices of wool at Boston; a comparison of prices of domestic and imported wools. (Agriculture information bulletin no. 118) | Wash., U.S. Agricultural Marketing Service, 1954. 41 p. |
| Organisation for European Economic Cooperation. | The European textile industry in 1953. | Paris, 1954. 53 p. |
| U.S. Bureau of Labor Statistics. | Cotton and synthetic textiles: wage trends, 1950-1953. (U.S. Bureau of Labor Statistics report no. 50) | Wash., 1954. 14 p. |

## TEXTILE PROCESSING

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| Textile Operating Executives of Georgia. | Report of discussions on questions of carding, spinning and warp preparation, 1954. | Atlanta, 1954. 23 p. |